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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

LAIR, DONALD M

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/056,634

Applicant(s)

MIR ET AL.

Examiner

Donald M. Lair

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-10,12,14-19,21,23-27,29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 3,5,11,13,20,22,28 and 30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it should be clear, concise, and limited to 150 words. Correction is required. See MPEP § 608.01(b).

Drawings

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old appears to be illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6 – 10, 12, 14 – 19, 21, 23 – 27, 29, and 31 – 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Collier-Hallman et al. (US-6,002,226).

5. In regards to Claims 1, 9, 18, and 26, Collier-Hallman et al. disclose a method of determining a current in an electric machine coupled to a polyphase bus, wherein the method comprises detecting a rotational position of the electric machine with a position encoder coupled to the electric machine (Column 3, lines 12 and 130, controlling an inverter comprising a plurality of switching devices, the inverter having an input coupled to a direct current bus (Column 4, lines 14 – 27; Column 5, lines 1 – 31), and an output coupled to the polyphase bus,

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the inverter responsive to commands from a controller coupled to the inverter and to the position encoder (Figs. 3 and 4; Column 4, lines 27 – 32), measuring a current from the direct current bus, and capturing the current at a predefined interval of time (Column 3, lines 46 – 63).

6. In regards to Claims 2, 10, 19, and 27, Collier-Hallman et al. disclose a method comprising all of the elements described above, further comprising determining a set of values representative of a magnitude of currents on each phase of the polyphase bus (Column 8, lines 16 – 27).

7. In regards to Claims 4, 12, 21, and 29, Collier-Hallman et al. disclose a method comprising all of the elements described above, wherein they further disclose that the motor current is directly related to torque current (Column 1, lines 39 – 42) and since the reference teaches obtaining a value representing motor current it therefore teaches obtaining a value representing torque current.

8. In regards to Claims 6, 14, 23, and 31, Collier-Hallman et al. disclose a method comprising all of the elements described above, wherein the electric machine comprises a permanent magnetic motor (Column 1, lines 19 and 20) and the position encoder includes a rotor position sensor (Column 3, lines 12 and 13).

9. In regards to Claims 7, 15, 24, and 32, Collier-Hallman et al. disclose a method comprising all of the elements described above, wherein the electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation, wherein it is inherent that a multiplicity of brushless motors are characterized by a sinusoidal magnetic field excitation (Column 1, lines 12 – 27).

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10. In regards to Claims 8, 17, 25, 33, Collier-Hallman et al. disclose a method comprising all of the elements described above, wherein the capturing is characterized by sampling a signal value representative of the current and the sampling is controlled by the controller to be operative only at the predefined interval of time (Column 3, lines 46 – 63).

11. In regards to Claim 16, Collier-Hallman et al. disclose a method comprising all of the elements described above, wherein the inverter is comprised of switching devices coupled to and responsive to commands from the controller (Column 4, lines 14 – 34).

Allowable Subject Matter

12. Claims 3, 5, 11, 13, 20, 22, 28, and 30 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

14. In regards to Claims 3, 11, 20, and 28, the prior art of record does not suggest a reasonable motivation for establishing an interval of time when the following conditions are true: an electric machine is within a predefined rotational angle, a predefined combination of the switching devices are active, and an angle between a phase voltage and a corresponding phase current on each phase of the polyphase bus being within a range of about minus thirty to about thirty degrees.

15. In regards to Claims 5, 13, 22, and 30, the prior art of record does not suggest a reasonable motivation for establishing an interval of time when the following conditions are true: a particular back EMF voltage waveform for a given phase of the electric machine attains its peak value, the electric machine is within a predefined rotational angle, a predefined

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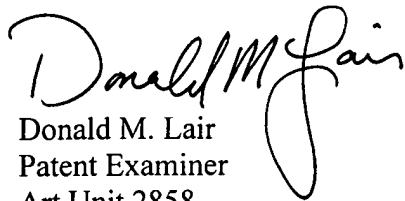
combination of the switching devices are active, and an angle between a phase voltage and a corresponding back EMF on each phase of the polyphase bus being within a range of about minus thirty to about thirty degrees.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald M. Lair whose telephone number is (703) 305-4450. The examiner can normally be reached on Monday - Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1436.



Donald M. Lair
Patent Examiner
Art Unit 2858
May 29, 2003



N. Le
Supervisory Patent Examiner
Technology Center 2800